MC questions had a 3-point value each. Some question *incorrect* choices were awarded some points based on their “trickiness” while other question incorrect choices were awarded no points because it was a major target for you to have learned or the choice was not logical. This will not be the case on your AP exam, but I’m not that mean in class ☺

See me to discuss any questions about your personal responses and points awarded/deducted.

1. C
2. A
3. A
4. C
5. A
6. C
7. A
8. C
9. B
10. A

**FRQ 1**

a. ALL LIFE USES GLYCOLYSIS WHICH DOESN’T REQUIRE OXYGEN; EARLY EARTH DIDN’T HAVE OXYGEN.

(2 points)

b. 1 point for identifying each logical evidence, 1 point for explaining its connection to endosymbiotic theory.

Circular chromosomes in prokaryotes & eukaryote organelles show organelles were likely once prokaryotes engulfed by other prokaryote cells.

Double membrane in prokaryotes & eukaryote organelles shows organelles were likely once prokaryotes engulfed by other prokaryote cells.

Photosynthetic enzyme locations support engulfment theory.

Others acceptable if explained similarly.

**FRQ 2**

a. 1 point

Figure out red allele frequency using hardy Weinberg:

Blue phenotype = q2 because it’s the recessive trait (.70 in 1990) and (.95 in 2000)

Blue allele frequencies = sq-root of .70 = **.84 in 1990** and sq-root of .95 = **.97 in 2000**

Use blue allele frequencies to calculate red allele frequencies

red allele frequency in 1990 = **.16** and in 2000 = **.03**

Calculate percent change

[(Final – Initial) / Initial]

[(.03 - .16) / .16] = **- 81%**

b. 1 Point each

Pop. A likely mechanism: Preferential mating, obvious trend in color selection but prompt explicitly states no selective advantage for survival (No natural selection). Other mechanisms not likely to cause the obvious directional change observed in pop. A.

Pop. B unlikely: Any of the 5 mechanisms because prompt states geographically isolated so gene flow unlikely; mutations not likely to shift allele frequencies at all unless chemical exposure occurs. All other mechanisms would cause significant changes.

c. 1/2 point for EACH statement:

* Population A would be greatly impacted since most birds are blue and the snakes eat blue birds only. Large drop in numbers expected and subjected to genetic drift after 2001 event.
* Population B would likely demonstrate evolution by survival of the fittest (natural selection) because they have greater diversity, which allows NS to operate. Blue would decrease while red increases and population remains stable and healthy.

d. Any of the 5 mechanisms discussed, some examples are below. 1 point each.

gametic: sperm/egg no longer compatible

behavioral: new mating rituals/songs develop